

### **REMARKS**

The Examiner is thanked for the thorough examination of the application. No new matter is believed to be added to the application by this Response.

### **Entry Of Response**

Entry of this Response under 37 C.F.R. 1.116 is respectfully requested because it places the application in condition for allowance. Alternately, entry is requested as placing the application in better form for appeal.

### **Status Of The Claims**

Claims 1-30 and 32-35 are pending in the application. The Examiner has withdrawn claims 1-27 from consideration.

### **Rejections Under 35 U.S.C. §§102(b)/103(a) Over Schneemeyer**

Claims 28-30 and 32 are rejected under 35 U.S.C. §102(b) as being anticipated by Schneemeyer (U.S. Patent 5,912,797). Claims 33-35 are rejected under 35 U.S.C. §103(a) as being obvious over Schneemeyer. Applicants traverse.

The present invention pertains to a sputtering target containing a metal for forming a zirconium compound on a film by a reactive sputtering process. Of the many embodiments of the invention, independent claim 28 typically sets forth a novel combination of elements such that the sputtering yield of the metal is more than twice the sputtering yield of zirconium in an argon atmosphere, and the main material of the

zirconium target containing the metal is at least one of metallic zirconium or carbon-containing zirconium.

Schneemeyer pertains to dielectric films of amorphous compositions. The Examiner turns to column 6, lines 15-35 of Schneemeyer, which describes a composite sputtering target that contains titanium, zirconium and tin. Schneemeyer at column 6, lines 17-19 discusses a target containing 60% titanium, 20% zirconium and 20% tin. That is, Schneemeyer fails to disclose a sputtering target that has zirconium as the main component. In contrast, claim 28 of the present invention sets forth that "a main material for the zirconium target containing the metal is at least one of metallic zirconium or carbon-containing zirconium."

Schneemeyer additionally fails to disclose or suggest doping a zirconium target with a metal having more than twice the sputtering yield of zirconium (although Schneemeyer uses tin, Schneemeyer fails to recognize this property of tin).

In contrast, Table 1 of the specification uses molar ratios of 60-90:40-10 Zr:other metals (Embodiments 1-10). Embodiments 11 and 12 use a molar ratio of 80:20 ZrC:Sn.

As a result, Schneemeyer fails to teach each and every element of claim 28 of the present invention. Schneemeyer thus fails to anticipate claim 28 of the present invention. Claims depending on claim 28 are patentable for at least the above reasons.

In paragraph 5 at pages 3 and 4 of the Office Action, the Examiner turns to Schneemeyer at column 6, lines 65-69 for a discussion pertaining to using a small

amount of magnesium or calcium to compensate for calcium traps. The Examiner then asserts that these teachings from the single reference of Schneemeyer are sufficient to render claims 33-35 *prima facie* obvious.

To establish a *prima facie* case of obviousness, "the prior art reference (or references when combined) must teach or suggest all the claim limitations." *MPEP* §2143. In addition, if a reference needs to be modified to achieve the claimed invention "there must be a showing of a suggestion or motivation to modify the teachings of that reference to the claimed invention in order to support the obviousness conclusion." *Sibia Neurosciences Inc. v. Cadus Pharmaceutical Corp.*, 225 F.3d 1349, 55 USPQ2d 1927 (Fed. Cir. 2000).

In this case, the Examiner has failed to point out where in the single reference of Schneemeyer the teaching or suggestion resides to produce all the elements of 33-35. As a result, the teachings of Schneemeyer are insufficient to render claims 33-35 *prima facie* obvious.

These rejections are overcome and withdrawal thereof is respectfully requested.

**Rejections Under 35 U.S.C. §103(a) Based On Hartig**

Claims 28-30 and 32 are rejected under 35 U.S.C. §103(a) as being obvious over the single reference of Hartig (U.S. Patent 5,403,458). Claims 33-35 are rejected under

35 U.S.C. §103(a) as being obvious over Hartig in view of Finley (U.S. Patent 6,677,063). Applicants traverse.

Hartig pertains to a sputter coating target. The Examiner turns to Hartig at column 6, lines 40-45, which discusses nonconductive coating components that are oxides or nitrides of metals that can include zirconium.

Hartig fails to disclose or suggest a sputtering target formed from metallic zirconium or carbon-containing zirconium (claim 28 of the present invention).

At page 4, lines 9-10 of the Office Action, the Examiner points to column 6, lines 40-45 of Hartig: "Other nonconductive coating components include, for example, the **nitrides or oxides** of: aluminum, bismuth, chromium, boron, germanium, tin, titanium, tungsten, vanadium, zinc, zirconium, and certain combinations or alloys thereof." (Emphasis added).

However, this passage of Hartig discusses an oxide of zirconium, not the metallic zirconium of carbon-containing zirconium of claim 28 of the present invention.

Hartig additionally fails to recognize the innovation of doping a zirconium target with a metal having more than twice the sputtering yield of zirconium.

At page 5 of the Office Action, the Examiner turns to Finley (column 8, lines 25-38) for teachings pertaining to dopants such as magnesium, yttrium and calcium. However, these teachings of Finley fail to address the deficiencies of Hartig in suggesting a claimed embodiment of the present invention.

As a result, the single reference of Hartig fails to suggest each and every element of claim 28 of the present invention. The burden of inferring obviousness over

a single reference has been discussed above. A *prima facie* case of obviousness has thus not been made. Claims depending upon claim 28 are patentable for at least the above reasons. Also, Finley fails to address the deficiencies of Hartig sufficient to render claims 33-35 *prima facie* obvious.

These rejections are overcome and withdrawal thereof is respectfully requested.

### **Information Disclosure Statement**

The Examiner is thanked for considering the Information Disclosure Statement filed March 25, 2004 and for making the initialed PTO-1449 form of record in the application in the Office Action mailed May 10, 2005.

### **The Drawings**

The Examiner has indicated that the drawing figures are acceptable in the Office Actions mailed May 5, 2005 and January 25, 2006.

### **Foreign Priority**

The Examiner has acknowledged foreign priority in the Office Action mailed January 25, 2006.

### **Conclusion**

The Examiner's rejections have been overcome, obviated, or rendered moot. No issues remain. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability.

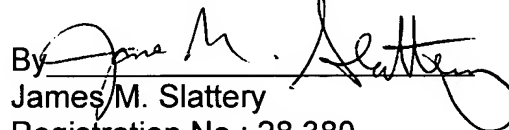
Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D. (Reg. No.42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

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Respectfully submitted,



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